DRAFT REVISED SEDIMENT POLICY

Corrective Action Seminar
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New Hampshire DES
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Presentation Outline

- Introduction
- Questions
- Revisions
- Case Studies
- Contacts and References

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History and Purpose

- Policy issued 4/9/02 and revised 9/10/02
- A risk-based approach
- Consistent with Env-Ws 1700 (WQ Standards)
- Used to decide if “Aquatic life use” is supported
- Applies to organisms that live in the sediment

Basic Concepts of Sediment Policy

- Triad approach
- Bioaccumulation risk
- Weigh each component

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Triad Approach

1. Compare chemical results with literature screening values
2. Perform laboratory toxicity bioassays
3. Perform field community structure assessment compared to a reference site

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Bioaccumulation Risk

- Only for contaminants that bioaccumulate
- Mercury, some lipid-soluble organics, e.g., PCBs
- Estimate or measure tissue concentrations in top food chain organism
- Compare to toxicity literature values

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Questions Regarding Sediment Screening

- What thresholds to use?
  - Upper or lower thresholds
  - Various sources, all peer-reviewed
- If threshold exceeded, then what?
- What if obvious risk, e.g., free product?

Questions Regarding
Sediment Toxicity Bioassays

- Where to collect sediment samples?
- What organisms appropriate?
- Duration of bioassay?
- Skip and go straight to community assessment?

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Questions Regarding Benthic Community Assessment

- How to choose a reference site?
- How to interpret results if upstream is impacted?
- What if community assessment contradicts results of sediment screening and toxicity bioassays?

Questions Regarding Bioaccumulation Risk

- When is this necessary to assess?
  - Contaminants?
  - Concentrations?

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Objectives

- Provide flexibility for State-wide applicability
- Encourage professional judgment on a site-specific basis
- Address audience not trained in ecological risk assessment

Revisions Summary

- Specific instructions in risk assessment approach
- Clearer decision-making process
- Weight of evidence
- Integration of bioaccumulation risk potential

Sediment Screening Revisions

- Step-by-step instructions with flowchart
- Compare to TECs and PECs
- Source(s) to be determined by assessor
- Prioritize locations
- Quantify total organic carbon (TOC) and grain size
- Evaluate contaminant spatial distribution

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Sediment Toxicity Analyses Revisions

- Prioritization sampling
- Organism determination
  - freshwater vs. marine
- Site-specific assessment endpoints
  - 10-day bioassay

Additional Sediment Toxicity Analyses Revisions

- Substitute alternative analyses only upon prior approval by the NH DES
- Exclude reasons for false negative toxicity
- Reasons to skip to community assessment

Benthic Community Assessment Revisions

- Reference location - neither impacted by the site nor by other sources

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Bioaccumulation Risk Revisions

- Contaminants with low water solubility and high lipid solubility (Log Kow>4.2)
- Assess bioaccumulation if:
  - PBT and
  - if a TEC is available, HQ-TEC>1

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Typical Applications

- Hazardous waste sites, where a regulated release has impacted sediments
- Dam removals
- Aquatic Life Use Support (ALUS) determinations

Case Study: Hazardous Waste Site

- MGP Site in SW NH
- Sediment chemistry data indicated PAHs posed moderate to high risk
- Toxicity bioassays not possible, so instead conducted pore water toxicity tests → not toxic
- Community assessment indicated no impact
- Fish tissue OK when tested for bioaccumulation of PBTs

Case Study:
Dam Removal Project

- Dam removal project in SW NH
- Sediment chemistry: moderate risk
  - spatially uniform PAH
  - metals at impoundment
- Impacts to downstream locations upon dam removal are not anticipated → further evaluation is not necessary
- Bioaccumulation not an issue

Case Study:
305b Report

- National Coastal Assessment (NCA)
- Sediment chemistry, sediment toxicity, and community assessment all performed
- Statistical analyses (e.g., PCA) of triad data

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References

- State Water Quality Laws: RSA 485-A
  http://gencourt.state.nh.us/rsa/html/indexes/485-A.html
- Env- Ws 1700 Surface Water Quality Regulations
  http://www.des.state.nh.us/wmb/env-ws1700.pdf
- Sediment Policy
  http://www.des.state.nh.us/wmb/wqsac/sediment_policy.pdf
- EPA Water Quality Standards handbook
  http://www.epa.gov/waterscience/standards/handbook/

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